U. S. DEPARTMENT OF AGRICULTURE
Forest Service

FOREST PEST LEAFLET 39
August 1959

Pine Root Collar Weevil

By D. C. Schmiege[1]

The pine root collar weevil, *Hylobius radicis* Buchanan, is a native insect that has been recorded from the New England States south to Virginia, west to Minnesota, and north to the Canadian Provinces of Ontario and Manitoba.

The weevil is a serious pest of jack pine and Scotch pine. It also attacks red pine but is rarely found in eastern white pine. Lodgepole and ponderosa pines have also been reported as hosts.

Evidence of Attack and Damage Caused

The first outward evidence of larval feeding is a slight yellowing of the foliage. This is often followed by increased foliage discoloration and death of the tree. Large trees, however, may sustain repeated attacks without dying, although growth is reduced. Leaning trees and trees blown over or broken at the ground line are symptoms of a heavily infested stand.

The adult weevil feeds on the tender bark of twigs, sometimes causing deformity and twig mortality (fig. 1). The more important damage, however, is caused by the larvae which feed in the cambial region at the base of the host tree. Feeding is confined to the trunk and base of large roots below the ground line. This feeding often causes complete girdling, which kills the tree. Frequently incomplete girdling weakens the trunk so that snow and wind cause breakage (fig. 2).

Early infestations are frequently overlooked during plantation examinations. They can be detected by

F–488103

FIGURE 1.—Part of a red pine twig showing typical feeding damage of a pine root collar weevil adult.

[1] Forest entomologist, Lake States Forest Experiment Station, Forest Service, U.S. Department of Agriculture. The Station headquarters is maintained at St. Paul 1, Minn., in cooperation with the University of Minnesota.

504436°—59

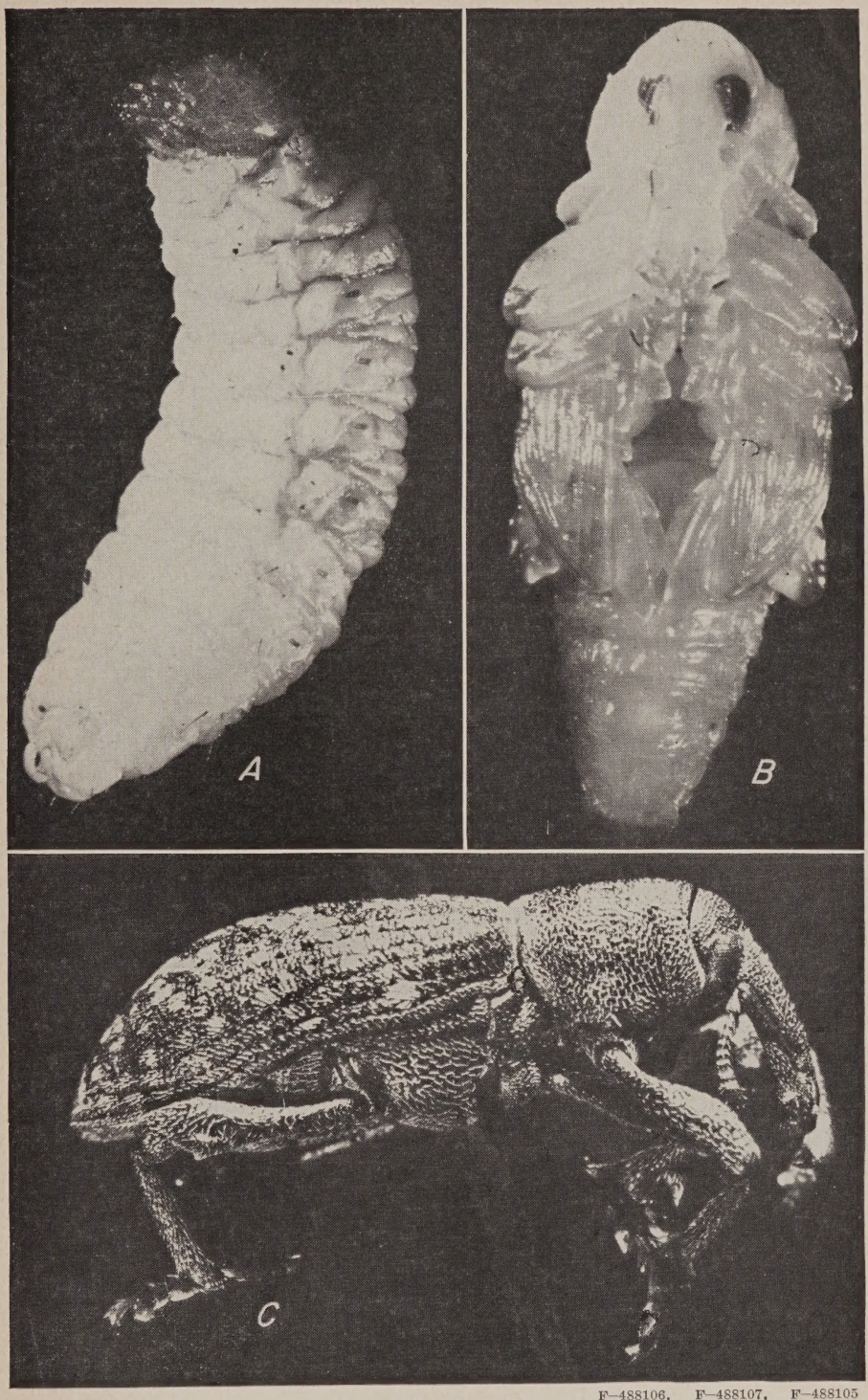
F–488104

FIGURE 2.—A Scotch pine severely girdled by larval feeding.

scraping away the duff and soil at the root collar; symptoms are darkened, pitch-infiltrated soil and an enlarged trunk.

Description of Stages

The adult weevil is an elongate, dark brown snout beetle from 3/8 to 1/2 inch long, marked with irregular patches of white-to-yellowish scalelike hairs (fig. 3, *C*). The wing covers are marked by longitudinal rows of elongated punctures. The eggs are creamy white, elliptical, and about 2 millimeters long by 1.2 millimeters wide. The larvae are white, cylindrical, and footless with an orange-brown head capsule. When full grown they are slightly larger than the adult (fig. 3, *A*). The pupae are yellowish-white and about the same size as the adult (fig. 3, *B*).



F–488106, F–488107, F–488105

FIGURE 3.—Pine root collar weevil: *A*, Larva, slightly longer than adult; *B*, pupa, same length as adult; *C*, adult, about ⅜ to ½ inch long.

Life History

The winter is passed in both the larval and adult stages. The larvae overwinter in their burrows, which may be in the inner bark or in the soil near the base of the roots. The adults hibernate in the duff or mineral soil.

Activity is resumed in May. Most of the adult activity is nocturnal although a few weevils may be observed on cloudy days. Eggs are laid singly in cavities gnawed in the bark at the base of the tree. Mating and egg laying occur throughout the summer. Because of this all stages of the insect may be found during late summer. Pupation generally takes place in August or September.

Natural Control

No effective predators have been discovered, although a carabid beetle, *Pasimachus elongatus* Lec., has been observed feeding on the adults. No parasites of the weevil have been determined. Diseased larvae and adults have been observed, but it is not known whether diseases are an effective control. Edaphic factors such as soil moisture seem to be very important.

Indirect Control

Root collar weevil damage is most severe on sandy, well-drained soils. The most severely attacked trees are those exposed on the edges of plantations and in windbreaks, or scattered throughout old fields. In the light of these considerations, the following management recommendations are made: (1) establish and maintain good stocking (2) avoid the planting of highly susceptible hosts (jack pine and Scotch pine) on dry, sterile soils, and (3) remove or destroy "brood" trees containing an insect population before planting open areas.

Direct Control

Recent investigations in Ontario, Canada, indicate that satisfactory control of this insect can be obtained by using dieldrin or lindane.[2]

The formulations consist of an emulsion of 2 pounds of dieldrin or ½ pound of lindane in 100 gallons of water. The above mixtures have given over 95-percent control for 4 years. Apply the insecticide as a spray to the soil surface around the tree trunk out to 8 inches. One pint of solution is sufficient for a tree 5 to 8 feet in height. The insecticide has little or no effect on the larvae, so results are not realized until the year following application. The adults are killed while crawling through the duff and soil.

This is a slow and comparatively expensive method of control which might preclude its use on extensive forest acreages. However, its use may be justified on valuable plantations or windbreaks.

CAUTION: Lindane and dieldrin are poisonous. Store them in plainly labeled containers, away from all food products. Follow directions for handling and heed precautions given on container labels.

References

AN APPARENTLY NEW SPECIES OF NORTH AMERICAN HYLOBIUS, WITH SYNOPTIC KEY (COLEOPTERA; CURCULIONIDAE). BUCHANAN, L. L. Wash. Ent. Soc. Proc. 36: 252–256. 1934.

THE PINE-ROOT COLLAR WEEVIL. SCHAFFNER, J. V., JR., and H. L. MCINTYRE. Jour. Forestry 42: 269–275. 1944.

[2] Personal correspondence from Mr. K. E. Stewart, Laboratory of Forest Pathology, Maple, Ontario, on file at the Lake States Forest Experiment Station.

U.S. GOVERNMENT PRINTING OFFICE: 1959

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington 25, D.C. - Price 5 cents